The Market Forces of Supply and Demand
MARKETS AND COMPETITION

• Supply and demand are the two words that economists use most often.

• Supply and demand are the forces that make market economies work.

• Modern microeconomics is about supply, demand, and market equilibrium.
What Is a Market?

- A *market* is a group of buyers and sellers of a particular good or service.

- The terms supply and demand refer to the behavior of people . . . as they interact with one another in markets.
What Is a Market?

• Buyers determine demand.

• Sellers determine supply.
What Is Competition?

• A *competitive market* is a market in which there are many buyers and sellers so that each has a negligible impact on the market price.
What Is Competition?

• Competition: Perfect and Otherwise
  • Perfect Competition
    • Products are the same
    • Numerous buyers and sellers so that each has no influence over price
    • Buyers and Sellers are price takers
  • Monopoly
    • One seller, and seller controls price
What Is Competition?

• Competition: Perfect and Otherwise
  • Oligopoly
    • Few sellers
    • Not always aggressive competition
  • Monopolistic Competition
    • Many sellers
    • Slightly differentiated products
    • Each seller may set price for its own product
DEMAND

• *Quantity demanded* is the amount of a good that buyers are willing and able to purchase.

• Law of Demand
  – The *law of demand* states that, other things equal, the quantity demanded of a good falls when the price of the good rises.
The Demand Curve: The Relationship between Price and Quantity Demanded

- Demand Schedule
  - The *demand schedule* is a table that shows the relationship between the price of the good and the quantity demanded.
**Catherine’s Demand Schedule**

<table>
<thead>
<tr>
<th>Price of Ice-Cream Cone</th>
<th>Quantity of Cones Demanded</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.00</td>
<td>12</td>
</tr>
<tr>
<td>0.50</td>
<td>10</td>
</tr>
<tr>
<td>1.00</td>
<td>8</td>
</tr>
<tr>
<td>1.50</td>
<td>6</td>
</tr>
<tr>
<td>2.00</td>
<td>4</td>
</tr>
<tr>
<td>2.50</td>
<td>2</td>
</tr>
<tr>
<td>3.00</td>
<td>0</td>
</tr>
</tbody>
</table>
The Demand Curve: The Relationship between Price and Quantity Demanded

• Demand Curve
  • The *demand curve* is a graph of the relationship between the price of a good and the quantity demanded.
Figure 1 Catherine’s Demand Schedule and Demand Curve

1. A decrease in price ... 
2. ... increases quantity of cones demanded.
Market Demand versus Individual Demand

- Market demand refers to the sum of all individual demands for a particular good or service.
- Graphically, individual demand curves are summed horizontally to obtain the market demand curve.
The market demand curve is the horizontal sum of the individual demand curves!

Catherine’s Demand + Nicholas’s Demand = Market Demand

When the price is $2.00, Catherine will demand 4 ice-cream cones.
When the price is $2.00, Nicholas will demand 3 ice-cream cones.
The market demand at $2.00 will be 7 ice-cream cones.

When the price is $1.00, Catherine will demand 8 ice-cream cones.
When the price is $1.00, Nicholas will demand 5 ice-cream cones.
The market demand at $1.00 will be 13 ice-cream cones.
Shifts in the Demand Curve

• Change in Quantity Demanded
  • Movement along the demand curve.
  • Caused by a change in the price of the product.
A tax on sellers of ice-cream cones raises the price of ice-cream cones and results in a movement along the demand curve.
Shifts in the Demand Curve

- Consumer income
- Prices of related goods
- Tastes
- Expectations
- Number of buyers
Shifts in the Demand Curve

• Change in Demand
  • A shift in the demand curve, either to the left or right.
  • Caused by any change that alters the quantity demanded at every price.
Figure 3 Shifts in the Demand Curve

- **Demand curve, \( D_1 \)**: Increase in demand
- **Demand curve, \( D_2 \)**: Decrease in demand
- **Demand curve, \( D_3 \)**: Initial demand curve
Shifts in the Demand Curve

• Consumer Income
  • As income increases the demand for a normal good will increase.
  • As income increases the demand for an inferior good will decrease.
Consumer Income Normal Good

Price of Ice-Cream Cone

$3.00

Increase in demand

D1

D2

An increase in income...

Quantity of Ice-Cream Cones
Consumer Income Inferior Good

- Price of Ice-Cream Cone
- Quantity of Ice-Cream Cones

An increase in income...

Decrease in demand

D_2

D_1
Shifts in the Demand Curve

• Prices of Related Goods
  • When a fall in the price of one good reduces the demand for another good, the two goods are called *substitutes*.
  • When a fall in the price of one good increases the demand for another good, the two goods are called *complements*. 
Table 1 Variables That Influence Buyers

<table>
<thead>
<tr>
<th>Variable</th>
<th>A Change in This Variable...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>Represents a movement along the demand curve</td>
</tr>
<tr>
<td>Income</td>
<td>Shifts the demand curve</td>
</tr>
<tr>
<td>Prices of related goods</td>
<td>Shifts the demand curve</td>
</tr>
<tr>
<td>Tastes</td>
<td>Shifts the demand curve</td>
</tr>
<tr>
<td>Expectations</td>
<td>Shifts the demand curve</td>
</tr>
<tr>
<td>Number of buyers</td>
<td>Shifts the demand curve</td>
</tr>
</tbody>
</table>
SUPPLY

• *Quantity supplied* is the amount of a good that sellers are willing and able to sell.

• Law of Supply
  – The *law of supply* states that, other things equal, the quantity supplied of a good rises when the price of the good rises.
The Supply Curve: The Relationship between Price and Quantity Supplied

• Supply Schedule
  • The supply schedule is a table that shows the relationship between the price of the good and the quantity supplied.
### Ben’s Supply Schedule

<table>
<thead>
<tr>
<th>Price of Ice-Cream Cone</th>
<th>Quantity of Cones Supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.00</td>
<td>0 cones</td>
</tr>
<tr>
<td>0.50</td>
<td>0</td>
</tr>
<tr>
<td>1.00</td>
<td>1</td>
</tr>
<tr>
<td>1.50</td>
<td>2</td>
</tr>
<tr>
<td>2.00</td>
<td>3</td>
</tr>
<tr>
<td>2.50</td>
<td>4</td>
</tr>
<tr>
<td>3.00</td>
<td>5</td>
</tr>
</tbody>
</table>

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The Supply Curve: The Relationship between Price and Quantity Supplied

• Supply Curve
  • The *supply curve* is the graph of the relationship between the price of a good and the quantity supplied.
Figure 5 Ben’s Supply Schedule and Supply Curve

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
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<td>1.00</td>
<td>1</td>
</tr>
<tr>
<td>1.50</td>
<td>2</td>
</tr>
<tr>
<td>2.00</td>
<td>3</td>
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<td>4</td>
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<td>5</td>
</tr>
</tbody>
</table>

1. An increase in price...
2. ... increases quantity of cones supplied.
Market Supply versus Individual Supply

- Market supply refers to the sum of all individual supplies for all sellers of a particular good or service.
- Graphically, individual supply curves are summed horizontally to obtain the market supply curve.
Shifts in the Supply Curve

- Input prices
- Technology
- Expectations
- Number of sellers
Shifts in the Supply Curve

• Change in Quantity Supplied
  • Movement along the supply curve.
  • Caused by a change in anything that alters the quantity supplied at each price.
A rise in the price of ice cream cones results in a movement along the supply curve.
Shifts in the Supply Curve

• Change in Supply
  • A shift in the supply curve, either to the left or right.
  • Caused by a change in a determinant other than price.
Figure 7 Shifts in the Supply Curve

Price of Ice-Cream Cone

Quantity of Ice-Cream Cones

Supply curve, $S_1$

Supply curve, $S_2$

Supply curve, $S_3$

Increase in supply

Decrease in supply
Table 2: Variables That Influence Sellers

<table>
<thead>
<tr>
<th>Variable</th>
<th>A Change in This Variable. . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>Represents a movement along the supply curve</td>
</tr>
<tr>
<td>Input prices</td>
<td>Shifts the supply curve</td>
</tr>
<tr>
<td>Technology</td>
<td>Shifts the supply curve</td>
</tr>
<tr>
<td>Expectations</td>
<td>Shifts the supply curve</td>
</tr>
<tr>
<td>Number of sellers</td>
<td>Shifts the supply curve</td>
</tr>
</tbody>
</table>
SUPPLY AND DEMAND TOGETHER

• *Equilibrium* refers to a situation in which the price has reached the level where quantity supplied equals quantity demanded.
SUPPLY AND DEMAND TOGETHER

• *Equilibrium Price*
  – The price that balances quantity supplied and quantity demanded.
  – On a graph, it is the price at which the supply and demand curves intersect.

• *Equilibrium Quantity*
  – The quantity supplied and the quantity demanded at the equilibrium price.
  – On a graph it is the quantity at which the supply and demand curves intersect.
**SUPPLY AND DEMAND TOGETHER**

### Demand Schedule

<table>
<thead>
<tr>
<th>Price of Ice-Cream Cone</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.00</td>
<td>19</td>
</tr>
<tr>
<td>0.50</td>
<td>16</td>
</tr>
<tr>
<td>1.00</td>
<td>13</td>
</tr>
<tr>
<td>1.50</td>
<td>10</td>
</tr>
<tr>
<td><strong>2.00</strong></td>
<td><strong>7</strong></td>
</tr>
<tr>
<td>2.50</td>
<td>4</td>
</tr>
<tr>
<td>3.00</td>
<td>1</td>
</tr>
</tbody>
</table>

### Supply Schedule

<table>
<thead>
<tr>
<th>Price of Ice-Cream Cone</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.00</td>
<td>0</td>
</tr>
<tr>
<td>0.50</td>
<td>0</td>
</tr>
<tr>
<td>1.00</td>
<td>1</td>
</tr>
<tr>
<td>1.50</td>
<td>4</td>
</tr>
<tr>
<td><strong>2.00</strong></td>
<td><strong>7</strong></td>
</tr>
<tr>
<td>2.50</td>
<td>10</td>
</tr>
<tr>
<td>3.00</td>
<td>13</td>
</tr>
</tbody>
</table>

At $2.00, the quantity demanded is equal to the quantity supplied!
Figure 8 The Equilibrium of Supply and Demand

- **Price of Ice-Cream Cone**
- **Quantity of Ice-Cream Cones**

**Equilibrium price**: $2.00

**Equilibrium quantity**: 7

**Supply** and **Demand** lines intersect at the equilibrium point, indicating the balance between supply and demand at $2.00 per ice-cream cone.
Equilibrium

• *Surplus*

  • When price > equilibrium price, then quantity supplied > quantity demanded.
    • There is excess supply or a surplus.
    • Suppliers will lower the price to increase sales, thereby moving toward equilibrium.
Figure 9 Markets Not in Equilibrium

(a) Excess Supply

Price of Ice-Cream Cone

Supply

Demand

Surplus

Quantity of Ice-Cream Cones

0 4 7 10

Quantity demanded Quantity supplied

$2.50

2.00

Surplus

4 7 10

Quantity of Ice-Cream Cones

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Equilibrium

**Shortage**

- When price < equilibrium price, then quantity demanded > the quantity supplied.
  - There is excess demand or a shortage.
  - Suppliers will raise the price due to too many buyers chasing too few goods, thereby moving toward equilibrium.
Figure 9 Markets Not in Equilibrium

(b) Excess Demand

<table>
<thead>
<tr>
<th>Price of Ice-Cream Cone</th>
<th>Quantity of Ice-Cream Cones</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2.00</td>
<td>4</td>
</tr>
<tr>
<td>1.50</td>
<td>7</td>
</tr>
</tbody>
</table>

Shortage

Quantity supplied

Quantity demanded
Equilibrium

- *Law of supply and demand*
  - The claim that the price of any good adjusts to bring the quantity supplied and the quantity demanded for that good into balance.
Table 3: Three Steps for Analyzing Changes in Equilibrium

1. Decide whether the event shifts the supply or demand curve (or perhaps both).
2. Decide in which direction the curve shifts.
3. Use the supply-and-demand diagram to see how the shift changes the equilibrium price and quantity.
Figure 10 How an Increase in Demand Affects the Equilibrium

Price of Ice-Cream Cone

Quantity of Ice-Cream Cones

1. Hot weather increases the demand for ice cream...

2. ...resulting in a higher price...

3. ...and a higher quantity sold.

Initial equilibrium

New equilibrium

Supply

$2.50

$2.00

0

7

10

D1

D2
Three Steps to Analyzing Changes in Equilibrium

- Shifts in Curves versus Movements along Curves
  - A shift in the supply curve is called a change in supply.
  - A movement along a fixed supply curve is called a change in quantity supplied.
  - A shift in the demand curve is called a change in demand.
  - A movement along a fixed demand curve is called a change in quantity demanded.
Figure 11 How a Decrease in Supply Affects the Equilibrium

1. An increase in the price of sugar reduces the supply of ice cream...

2. ...resulting in a higher price of ice cream...

3. ...and a lower quantity sold.
Table 4: What Happens to Price and Quantity When Supply or Demand Shifts?

<table>
<thead>
<tr>
<th></th>
<th>No Change in Supply</th>
<th>An Increase in Supply</th>
<th>A Decrease in Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Change in Demand</td>
<td>P same, Q same</td>
<td>P down, Q up</td>
<td>P up, Q down</td>
</tr>
<tr>
<td>An Increase in Demand</td>
<td>P up, Q up</td>
<td>P ambiguous, Q up</td>
<td>P up, Q ambiguous</td>
</tr>
<tr>
<td>A Decrease in Demand</td>
<td>P down, Q down</td>
<td>P down, Q ambiguous</td>
<td>P ambiguous, Q down</td>
</tr>
</tbody>
</table>

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• Economists use the model of supply and demand to analyze competitive markets.

• In a competitive market, there are many buyers and sellers, each of whom has little or no influence on the market price.
The demand curve shows how the quantity of a good depends upon the price.

- According to the law of demand, as the price of a good falls, the quantity demanded rises. Therefore, the demand curve slopes downward.

- In addition to price, other determinants of how much consumers want to buy include income, the prices of complements and substitutes, tastes, expectations, and the number of buyers.

- If one of these factors changes, the demand curve shifts.
• The supply curve shows how the quantity of a good supplied depends upon the price.
  – According to the law of supply, as the price of a good rises, the quantity supplied rises. Therefore, the supply curve slopes upward.
  – In addition to price, other determinants of how much producers want to sell include input prices, technology, expectations, and the number of sellers.
  – If one of these factors changes, the supply curve shifts.
Summary

• Market equilibrium is determined by the intersection of the supply and demand curves.
• At the equilibrium price, the quantity demanded equals the quantity supplied.
• The behavior of buyers and sellers naturally drives markets toward their equilibrium.
To analyze how any event influences a market, we use the supply-and-demand diagram to examine how the event affects the equilibrium price and quantity.

In market economics, prices are the signals that guide economic decisions and thereby allocate resources.